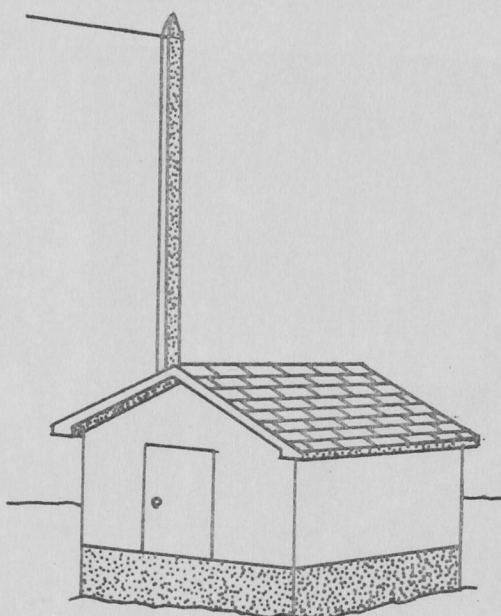


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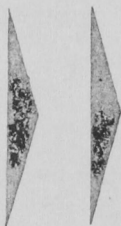
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PUMP HOUSES



PUMP HOUSES

The type of pump needed for the farm water pressure system will partly determine where it can be located. Deep-well piston and submersible pumps must be placed at the well. All makes of shallow well pumps and deep well jet pumps can be located at the well, in a warm barn, or the farm house basement. The basement location is best. The dry and warm atmosphere in the basement protects the pump against moisture and frost damage. Pumping problems can quickly be detected by the sound of the pump.

Sometimes the farm well is so far from the house that the pump must be nearer the well to operate efficiently. An insulated pump house can be used to protect the water pressure system that has to be located near the well.

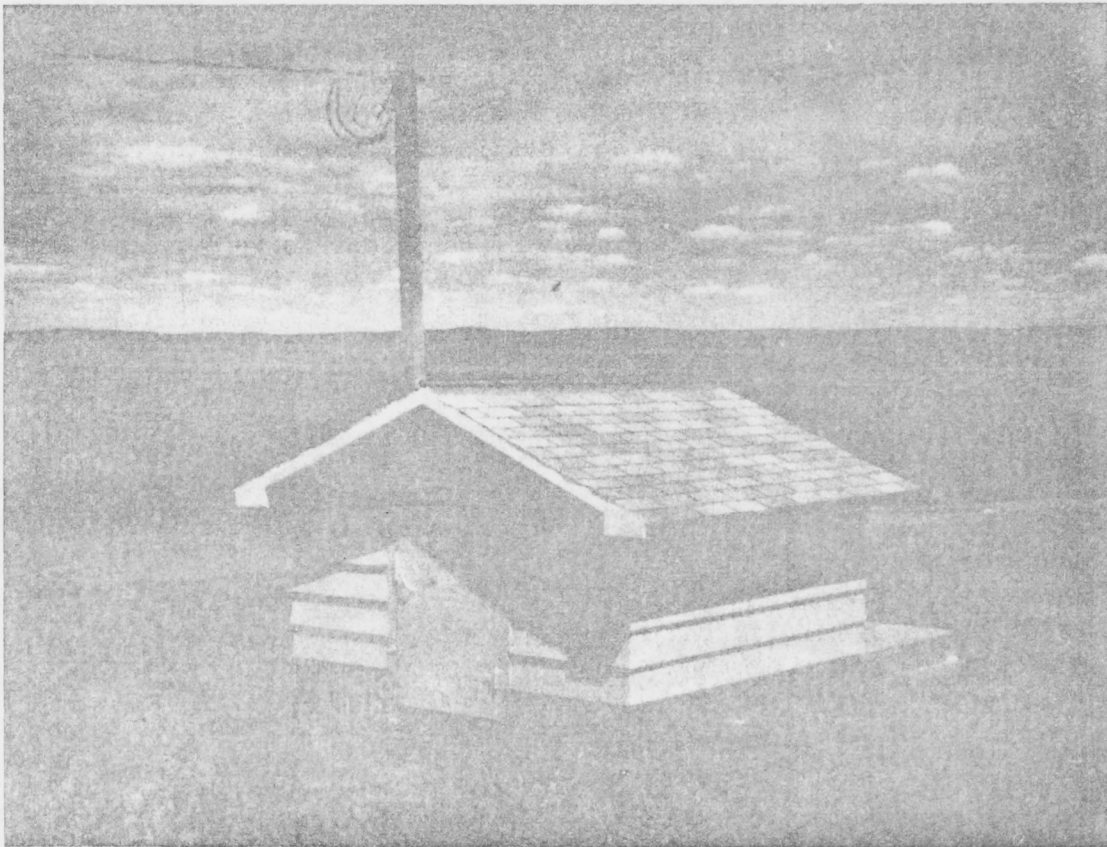


Figure 1 - Pump House

A pump house must be drained, ventilated and must be accessible for maintenance and repair.

Size

The pump house shown in Figure 2 is designed to enclose a pump and a 42-gallon pressure tank. The size of the pressure tank is usually the determining factor of the size of the pump house. Ample space should be allowed for the heating equipment and the servicing.

Location

A well-drained site is very desirable. A floor drain is provided to prevent internal flooding in the event of leaks in the system.

The pump house may be built over or beside the well, or offset several hundred feet to locate on high ground. If it is built over the well, the anchor bolts have to be accessible in the pump house instead of being hidden in the walls so that the pump house may be removed whenever servicing requires such removal. A pump house distant from the yard pole may require an additional transformer. Regulation of electrical wiring may be found in electric codes and in FFIB technical bulletin T24 "Electrical Information for Farm Water and Sewage Systems."

Floor

A well-tamped gravel filled base 6 inches thick is necessary for a pump house. The floor is made of a 6-inch reinforced concrete slab. The floor should be carefully levelled and sloped toward the floor drain. Before the concrete floor is poured, the plastic water distribution pipe, together with the surrounding 4-inch fibre pipe are first embedded in the trench.

Anchor bolts (two per side) are set in the concrete 6 inches from the edge of the concrete slab. The wooden frame is secured by straps (Figure 3). The joints between the sills and the slab should be sealed with a caulking compound. A rigid styrofoam insulation is used around the edge of the floor to reduce the frost under the pump house.

Walls

The 2 x 4 frame is sheathed inside and outside with 5/16-inch plywood. A 4-mil thick polyethylene vapour barrier is placed between the frame and the inside plywood sheathing. It is important to make the pump house well insulated. A 3-inch batt-type insulation, fibreglass or rock wool will serve this purpose.

Roof

The roof is hinged to the front wall so that the roof may be opened should the pipe be lifted up for major repair.

A gable roof or a shed roof is optional. The roof is made of 2 x 4 rafters 16 inches on centre. The spaces between the rafters are insulated with refrigerator door seal. The roof is shingled for weather protection.

Heating and Ventilation

The heat from the pump motor and from the ground water is not enough to warm the pump house to prevent freezing in extreme cold weather. Heating can be achieved by four 100-watt light bulbs. Heating can also be achieved by heating cables wrapped around the pipe, the pump and the lower part of the tank or embedded in the concrete floor. A thermostat is used to regulate the temperature in the pump house in the range of 40°F. and 45°F. Some warm air leaks through the roof joints causing air circulation for the ventilation of the pump house.

Removable Roof Fastened
With Hook And Eye
Near Each Corner.

Roll Roofing.

$\frac{7}{16}$ " x 6" Dowels At Each
Corner Extending
Into Stud.

$\frac{5}{16}$ " Plywood Sheathing.

3" Batt-Type Insulation.

Polyethylene
Vapour Barrier.

$\frac{3}{8}$ " x 10" Anchor Bolts,
2 Per Side.

1" Insulation,
(Foamed Glass Or Plastic).

Tamped Gravel Fill.

6" Reinforced
Concrete Slab.

Asphalt Seal.

SECTION A-A

$\frac{5}{16}$ " Plywood Sheathing,
(Exterior And Interior).

2" x 4" Studs - 16" Centres.

1500 Watt Thermostatically
Controlled Heater Near Pump.
Or

800 Watts Of Heating Cable
Embedded In Concrete Floor.

Slope Floor To Drain
Floor Drain To
Gravel Sump.

4" Fibre Pipe
And Pressure Line.

Well Casing.

Pump Stand.

Opening For
2' x 6'-4"
Insulated Door.

Service
Entrance
Box.

4' - 0"

Bill of Materials for Pump House

4-Sacks Cement

1 yd. Gravel

28-59' Reinforcing Mesh

275 lin. ft. 2" x 4"

28 lin. ft. 1" x 4"

13-5/16" Plywood 4' x 8'

160 sq. ft. 3" Batt insulation

160 sq. ft. Vapour Barrier

36 sq. ft. Roll Roofing

42 sq. ft. Plastic Insulation

1 - Door & Hdwe.

4 - 3/8" x 10" Bolts

4 - 7/16" x 6" Bolts

Figure 2 - Plan of Pump House

(Designed by Agricultural Engineering Department, University of Saskatchewan, for F.F.I.B.)

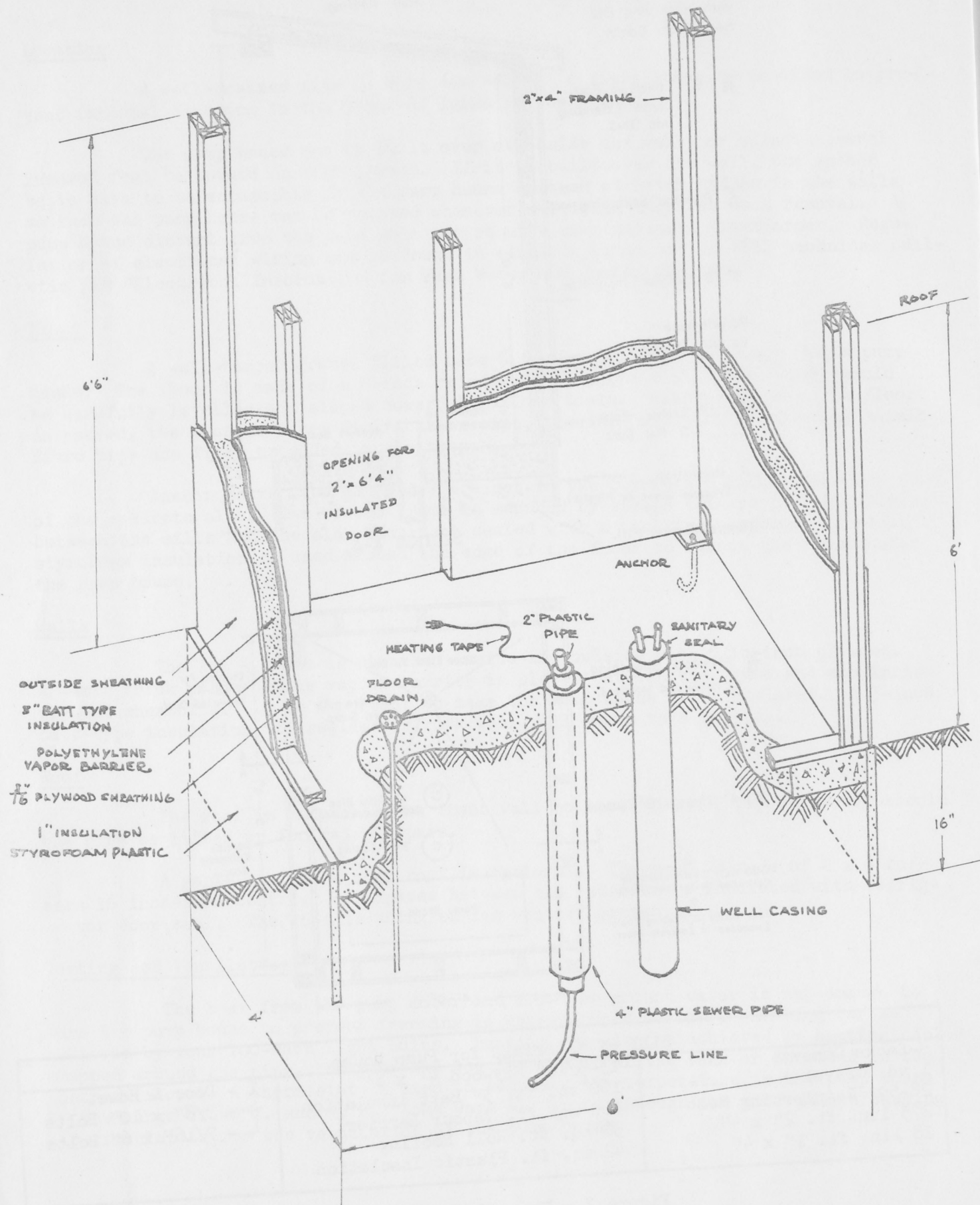


Figure 3 - Construction Detail of Pump House
T22, Page 4 of 4, September, 1965

ACKNOWLEDGEMENTS

Professional agriculturists and engineers of other institutions, provinces and states publish information, provide advice, and other services which aid our preparation of publications. Farmers, contractors, commercial firms and others contribute by testing, reporting their experiences, providing photographs and plans, and permitting FFIB to use their installations for observation or tests. Brevity does not permit credit to each source. We thank all who assisted; we reciprocate by offering this publication for the public benefit.

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